



PATENT ABSTRACTS OF JAPAN

(11)Publication number: **01216819 A**(43)Date of publication of
application: 30. 08 . 89(51)Int. Cl
B29C 53/04
B29C 71/02(21)Application number: **63043146**(22)Date of filing: **25 . 02 . 88**(71)Applicant: **MITSUBISHI PLASTICS IND
LTD**(72)Inventor: **HASHIMOTO TADASHI**

(54)METHOD OF BENDING PLASTIC SHEET

(57)Abstract:

PURPOSE: To realize the accurate and high speed bending of a plastic sheet by a method wherein the plastic sheet is bent and the bent part is heated by supersonic vibration and, after that, cooled so as to heat-treat said bent part.

CONSTITUTION: Firstly, bending grooves 12 are made by cold-bending (at 20°C) or by pressing with a die blade, the included angle of which is 90°, along folding lines 11 on a plastic sheet 1. By being cold-pressed on a female mold 3 with a male mold 2, the plastic sheet is correctly bent along the apex of a V-shape of each bending groove 12. When supersonic vibration is given to a supersonic vibration horn 21 under the condition that the supersonic vibration horn 21 is fitted from above the plastic sheet to the recessed part 31 of the female after the removal of the male mold 2, the temperatures of bent parts 13 become higher than the softening temperature of the sheet in a very short time due to the frictional heat developed by supersonic energy, resulting in softening the bent part and making the grooves 12, which are made in

advance, shallower through the restoration of the shape of the groove. Concretely, the bent parts 13 are reinforced by the restoration of thickness. Further, when the supersonic vibration is stopped, the temperatures of the bent parts 13 are rapidly cooled down to that of the female mold and of the supersonic vibration horn themselves, resulting in fixing the bent shape.

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